

=> fil reg

FILE 'REGISTRY' ENTERED AT 12:25:58 ON 09 SEP 2011  
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STRUCTURE FILE UPDATES: 8 SEP 2011 HIGHEST RN 1330234-06-4  
 DICTIONARY FILE UPDATES: 8 SEP 2011 HIGHEST RN 1330234-06-4

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TSCA INFORMATION NOW CURRENT THROUGH June 24, 2011.

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REGISTRY includes numerically searchable data for experimental and  
 predicted properties as well as tags indicating availability of  
 experimental property data in the original document. For information  
 on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

=> d que

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L2          41 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  (7439-93-2/BI OR
            10034-81-8/BI OR 12017-97-9/BI OR 12031-92-4/BI OR
            12031-95-7/BI OR 12039-13-3/BI OR 125579-65-9/BI OR
            130447-45-9/BI OR 1314-62-1/BI OR 132404-42-3/BI OR
            14283-07-9/BI OR 14797-73-0/BI OR 14874-70-5/BI OR
            152894-10-5/BI OR 16919-18-9/BI OR 16973-45-8/BI OR
            175786-46-6/BI OR 180984-63-8/BI OR 21324-40-3/BI OR
            223437-10-3/BI OR 244761-29-3/BI OR 24937-79-9/BI OR
            29935-35-1/BI OR 330671-30-2/BI OR 33454-82-9/BI OR
            371-77-7/BI OR 37181-39-8/BI OR 37217-08-6/BI OR 5347-82-0/
            BI OR 55526-39-1/BI OR 7791-03-9/BI OR 82113-65-3/BI OR
            857631-30-2/BI OR 857631-31-3/BI OR 857631-32-4/BI OR
            857631-33-5/BI OR 857631-34-6/BI OR 857631-35-7/BI OR
            857631-36-8/BI OR 9002-84-0/BI OR 90076-65-6/BI)
L3          14407 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  ?PYRROLIDINIUM?/C
            NS
L4          14225 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L3 NOT PMS/CI
L5          13774 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L4 AND NC4/ES
L6           3 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L5 AND L2
L7           1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  LI4012TI5/MF
L8           1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  LI04TI2/MF
L9          16 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  O5V2/MF
L10          1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  LI4MN5O12/MF
L11         2033 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  (LI(L)MG(L)(TI
            OR MN)(L)O)/ELS
L12          63 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L11 AND 12/O
L13          19 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L12 AND 4/ELC.SUB

L14          1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  CRLIO4TI/MF
L15         365 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  (LI(L)(MG OR NB

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OR ZR OR TO OR AL) (L)FE(L)P(L)O) /ELS

L16 301 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L15 AND O4P

L17 144 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L16 AND 5/ELC.SUB

L18 1 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON LI4012TI5/MF

L19 1 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON LIO4TI2/MF

L20 2 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L2 AND PMS/CI

L21 14082 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L5

L22 233 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L6

L23 1387 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L7

L24 249 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L8

L25 31676 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L9

L26 243 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L10

L27 14 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L13

L28 40 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L14

L29 161 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L17

L30 1387 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L18

L31 249 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L19

L32 19 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L2 AND X/ELS

L33 17 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L32 NOT PMS/CI

L34 22 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L2 NOT L32

L35 19 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L34 NOT L6

L36 2 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L35 NOT M/ELS

L37 19 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L33 OR L36

L38 38660 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L37

L39 QUE SPE=ON ABB=ON PLU=ON FUELCELL? OR BATTERY? OR BATTERIES? OR (FUEL? OR ELECTROCHEM? OR ELECTRO(W)CHEM? OR GALVAN? OR ELECTROLY? OR SECONDAR? OR PRIMAR?) (2A)CELL? OR FC OR SOFC OR DFC OR PEMFC

L40 QUE SPE=ON ABB=ON PLU=ON ANODE# OR NEGATIVE ELECTRODE#

L41 QUE SPE=ON ABB=ON PLU=ON CATHODE# OR POSITIVE ELECTRODE#

L42 403 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L21 AND L39

L43 73 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L42 AND L40 AND L41

L44 45 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L43 AND L38

L45 12 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L44 AND (L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31)

L47 91 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L21 AND L40 AND L41

L49 19 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L47 AND (L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31)

L50 94152 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L20

L51 3 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L49 AND L50

L52 19 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L49 OR L51

L53 QUE SPE=ON ABB=ON PLU=ON ION? (3A) (LIQUID? OR FLUID?)

L54 14 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L52 AND L53

L55 19 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L52 OR L54

L56 19 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L45 OR L55

L57 8 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L56 AND (1802-2006) /PRY,AY,PY

L59 73 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L47 AND L39

L60 51 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L59 AND L53

L61 6 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L60 AND (1802-2006) /PRY,AY,PY

L62 11 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L57 OR L61

=> fil hcap  
 FILE 'HCAPLUS' ENTERED AT 12:26:03 ON 09 SEP 2011  
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FILE COVERS 1907 - 9 Sep 2011 VOL 155 ISS 12  
 FILE LAST UPDATED: 8 Sep 2011 (20110908/ED)  
 REVISED CLASS FIELDS (/NCL) LAST RELOADED: Jun 2011  
 USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Jun 2011

HCAplus now includes complete International Patent Classification (IPC) reclassification data for the second quarter of 2011.

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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l62 1-11 ibib ed abs hitstr hitind

L62 ANSWER 1 OF 11 HCAPLUS COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 2007:1209046 HCAPLUS Full-text  
 DOCUMENT NUMBER: 147:489127  
 TITLE: Flexible energy storage devices  
 INVENTOR(S): Best, Adam Samuel; Snook, Graeme Andrew; Pandolfo, Anthony Gaetano; Hollenkamp, Anthony Frank; Kyratzis, Ilias Louis; Helmer, Richard James Neil  
 PATENT ASSIGNEE(S): Commonwealth Scientific and Industrial Research Organisation, Australia  
 SOURCE: PCT Int. Appl., 47pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2007118281	A1	20071025	WO 2007-AU497	20070418

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM,

10/584,379

PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV,  
 SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW  
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
 IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK,  
 TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,  
 TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG,  
 ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

AU 2007240125 A1 20071025 AU 2007-240125 20070418

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CA 2643789 A1 20071025 CA 2007-2643789 20070418

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EP 2025023 A1 20090218 EP 2007-718744 20070418

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 SK, TR, AL, BA, HR, MK, RS

JP 2009533831 T 20090917 JP 2009-505679 20070418

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US 20090311587 A1 20091217 US 2009-226492 20090309

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PRIORITY APPLN. INFO.: AU 2006-902006 A 20060418

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WO 2007-AU497 W 20070418

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 25 Oct 2007

AB This flexible energy storage device comprises a flexible housing, an electrolyte contained within the housing, an ~~anode~~ and ~~cathode~~ with current collectors and ~~anode/ cathode~~ material supported on the current collector. The current collector consists of a fabric substrate and an electron-conductive material. The electron-conductive material contains voids to enable penetration of the current collector by the electrolyte.

IT 223437-11-4, N-Butyl N-methyl pyrrolidinium  
 bis(trifluoromethanesulfonyl)imide  
 (flexible energy storage devices)

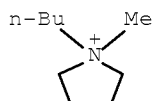
RN 223437-11-4 HCAPLUS

CN Pyrrolidinium, 1-butyl-1-methyl-, salt with  
 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1)  
 (CA INDEX NAME)

CM 1

CRN 223437-10-3

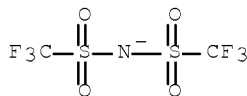
CMF C9 H20 N



CM 2

CRN 98837-98-0

CMF C2 F6 N O4 S2



IT 55526-39-1, Pyrrolidinium  
 (salt; flexible energy storage devices)  
 RN 55526-39-1 HCAPLUS  
 CN Pyrrolidine, conjugate acid (1:1) (CA INDEX NAME)



IPCI H01M0004-74 [I,A]; H01M0010-04 [I,A]  
 IPCR H01M0004-74 [I,A]; H01M0010-04 [I,A]; H01M0010-36 [I,A]  
 CC 52-3 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 76  
 IT 7439-93-2, Lithium, uses 223437-11-4, N-Butyl N-methyl  
 pyrrolidinium bis(trifluoromethanesulfonyl)imide 954144-43-5  
 (flexible energy storage devices)  
 IT 17523-59-0, Piperidinium 55526-39-1, Pyrrolidinium  
 (salt; flexible energy storage devices)  
 OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS  
 RECORD (2 CITINGS)  
 REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L62 ANSWER 2 OF 11 HCAPLUS COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 2007:873349 HCAPLUS Full-text  
 DOCUMENT NUMBER: 147:238832  
 TITLE: Secondary lithium battery using  
 ionic liquid  
 INVENTOR(S): Ishiko, Eriko; Kikuta, Manabu; Kono, Michiyuki  
 PATENT ASSIGNEE(S): Dai-Ichi Kogyo Seiyaku Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 24pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007088677	A1	20070809	WO 2006-JP324702	20061211

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,

10/584,379

CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, KE, KG,  
KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA,  
MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY,  
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW  
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,  
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,  
TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

JP 2007207675 A 20070816 JP 2006-27368 20060203

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CA 2641152 A1 20070809 CA 2006-2641152 20061211

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EP 1995817 A1 20081126 EP 2006-834457 20061211

<--

R: DE, FR, GB

CN 101379653 A 20090304 CN 2006-80053028 20061211

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CN 101379653 B 20110831

KR 2008105045 A 20081203 KR 2008-7020458 20080821

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US 20090169992 A1 20090702 US 2008-223627 20081001

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PRIORITY APPLN. INFO.: JP 2006-27368 A 20060203

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WO 2006-JP324702 W 20061211

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ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 10 Aug 2007

AB The battery comprises a separator between a cathode and an anode, and a Li salt-containing nonaq. electrolyte solution; where the electrolyte solution uses an ionic liquid solvent containing a bis(fluorosulfonyl)imide anion as an anion component and exhibiting a voltage of  $\geq 3.6$  V in a full charged state and a discharge average voltage of  $\geq 2.9$  V in terms of one hour discharge rate.

IT 223437-05-6

(electrolyte solns. containing ionic liquid solvents  
for secondary lithium batteries)

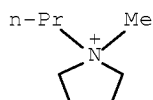
RN 223437-05-6 HCAPLUS

CN Pyrrolidinium, 1-methyl-1-propyl-, salt with  
1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1)  
(CA INDEX NAME)

CM 1

CRN 108259-90-1

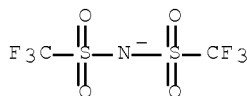
CMF C8 H18 N



CM 2

CRN 98837-98-0

CMF C2 F6 N O4 S2



IPCI H01M0010-40 [I,A]

IPCR H01M0010-40 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery electrolyte ionic  
liq solvent

IT Battery electrolytes

(electrolyte solns. containing ionic liquid solvents  
for secondary lithium batteries)

IT Secondary batteries

(lithium; electrolyte solns. containing ionic liquid  
solvents for secondary lithium batteries)

IT 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses 7782-42-5,  
Graphite, uses 12031-65-1, Lithium nickel oxide (LiNiO<sub>2</sub>)  
12057-17-9, Lithium manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>) 12190-79-3, Cobalt  
lithium oxide (CoLiO<sub>2</sub>) 15365-14-7, Iron lithium phosphate (FeLiPO<sub>4</sub>)  
90076-65-6, LITFSI 128975-24-6, Lithium manganese nickel oxide  
(LiMn<sub>0.5</sub>Ni<sub>0.5</sub>O<sub>2</sub>) 174899-82-2 223437-05-6 346417-97-8,  
Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>)  
(electrolyte solns. containing ionic liquid solvents  
for secondary lithium batteries)

OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS  
RECORD (5 CITINGS)

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L62 ANSWER 3 OF 11 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2007:564524 HCAPLUS Full-text

DOCUMENT NUMBER: 147:21201

TITLE: Electric double-layer capacitor having superior  
cycle characteristics and high-current  
discharge/charge characteristics with capacity for  
reducing capacitance decreases and resistance  
increases on high current cycles

INVENTOR(S): Sung, Do Kyong; Jung, Jun Tae; Hur, Jin Woo

PATENT ASSIGNEE(S): Vina Technology Co., Ltd., S. Korea

SOURCE: PCT Int. Appl., 28pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007058422	A1	20070524	WO 2006-KR2268	20060614

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 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM,  
 KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG,  
 MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT,  
 RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR,  
 TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
 IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,  
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,  
 TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
 ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

US 20080285208 A1 20081120 US 2008-93995 20080516

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US 7911767 B2 20110322

PRIORITY APPLN. INFO.:

KR 2005-109432 A 20051116

&lt;--

WO 2006-KR2268 W 20060614

&lt;--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 25 May 2007

AB Elec. double-layer capacitor having superior cycle characteristics and high-current discharge/charge characteristics with capacity for reducing capacitance decreases and resistance increases on high current cycles is claimed. The elec. double-layer capacitor comprises an electrode portion composed of an ~~anode~~ and a ~~cathode~~; a separator for providing elec. isolation between the ~~anode~~ and ~~cathode~~; and an electrolyte solution which is filled in a space between the ~~anode~~ and ~~cathode~~ so as to form elec. double-layers on surfaces of the ~~anode~~ and ~~cathode~~ upon application of a predetd. voltage, and in which a solvent and a solute are mixed so as to have a concentration of 1.25 to 2.5 mol/L.

IT 55526-39-1D, Pyrrolidinium, salts 69444-51-5,  
 Dimethylpyrrolidinium tetrafluoroborate 117947-85-0,  
 Ethylmethylpyrrolidinium tetrafluoroborate 345984-11-4  
 (elec. double-layer capacitor with adjustment of electrolyte to  
 give superior properties)

RN 55526-39-1 HCAPLUS

CN Pyrrolidine, conjugate acid (1:1) (CA INDEX NAME)



RN 69444-51-5 HCAPLUS

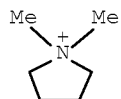
CN Pyrrolidinium, 1,1-dimethyl-, tetrafluoroborate(1-) (1:1) (CA INDEX NAME)

CM 1

CRN 15312-12-6

CMF C6 H14 N



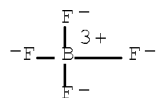


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



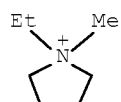
RN 117947-85-0 HCAPLUS

CN Pyrrolidinium, 1-ethyl-1-methyl-, tetrafluoroborate(1-) (1:1) (CA INDEX NAME)

CM 1

CRN 15302-90-6

CMF C7 H16 N

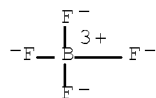


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CRN 14874-70-5

CMF B F4

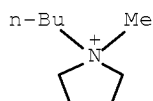
CCI CCS



RN 345984-11-4 HCAPLUS  
 CN Pyrrolidinium, 1-butyl-1-methyl-, tetrafluoroborate(1-) (1:1) (CA  
 INDEX NAME)

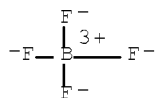
CM 1

CRN 223437-10-3  
 CMF C9 H20 N



CM 2

CRN 14874-70-5  
 CMF B F4  
 CCI CCS



IPCI H01G0009-022 [I,A]  
 IPCR H01G0009-022 [I,A]  
 CC 76-10 (Electric Phenomena)  
 Section cross-reference(s): 52  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,  
 Propylene carbonate 429-06-1, Tetraethylammonium tetrafluoroborate  
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate  
 2567-83-1, Tetraethylammonium perchlorate 14798-03-9D, Ammonium,  
 salts 55526-39-1D, Pyrrolidinium, salts  
 69444-51-5, Dimethylpyrrolidinium tetrafluoroborate  
 117947-85-0, Ethylmethylpyrrolidinium tetrafluoroborate  
 143314-16-3 345984-11-4  
 (elec. double-layer capacitor with adjustment of electrolyte to  
 give superior properties)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L62 ANSWER 4 OF 11 HCAPLUS COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 2007:562543 HCAPLUS Full-text  
 DOCUMENT NUMBER: 147:12855  
 TITLE: Hybrid battery  
 INVENTOR(S): Sung, Do Kyong; Jung, Jun Tae  
 PATENT ASSIGNEE(S): Vina Technology Co., Ltd., S. Korea

SOURCE: PCT Int. Appl., 33pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007058421	A1	20070524	WO 2006-KR2267	20060614

&lt;--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM,  
 KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG,  
 MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT,  
 RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR,  
 TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
 IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,  
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,  
 TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
 ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

US 20080318135	A1	20081225	US 2008-94018	20080516
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PRIORITY APPLN. INFO.:	KR 2005-109431	A	20051116
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WO 2006-KR2267	W	20060614
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## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

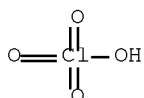
ED Entered STN: 24 May 2007

AB Disclosed herein is a hybrid battery using an electrochem. stable electrolyte composition and electrodes suitable for use in the electrolyte composition. The hybrid battery is non-toxic and highly stable, and has improved high-current charge/discharge characteristics. The hybrid battery comprises an electrode unit consisting of an anode and a cathode, a separator for elec. separating the anode and the cathode, and an electrolyte filled in a space between the anode and the cathode so as to form an elec. double layer on surfaces of the anode and cathode when a voltage is applied wherein the electrolyte contains a mixture of a lithium salt, an ammonium salt and a pyrrolidinium salt as solutes in a carbonate-based solvent so that the solute mixture has a concentration of 1.0-2.5 mol/L.

IT 7791-03-9, Lithium perchlorate 14283-07-9,  
 Lithium tetrafluoroborate 15302-90-6D, salt  
 15312-12-6D, Dimethylpyrrolidinium, salt 55526-39-1D  
 , Pyrrolidinium, salt 90076-65-6 223437-10-3D,  
 salt 345984-11-4  
 (hybrid battery)

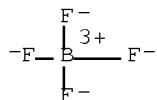
RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)

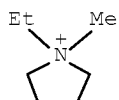


● Li

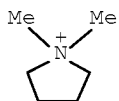
RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



RN 15302-90-6 HCAPLUS  
 CN Pyrrolidinium, 1-ethyl-1-methyl- (CA INDEX NAME)



RN 15312-12-6 HCAPLUS  
 CN Pyrrolidinium, 1,1-dimethyl- (CA INDEX NAME)



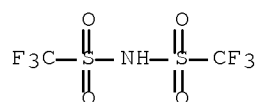
RN 55526-39-1 HCAPLUS  
 CN Pyrrolidine, conjugate acid (1:1) (CA INDEX NAME)



RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,

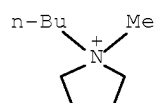
10/584,379

lithium salt (1:1) (CA INDEX NAME)



RN 223437-10-3 HCAPLUS

CN Pyrrolidinium, 1-butyl-1-methyl- (CA INDEX NAME)



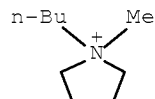
RN 345984-11-4 HCAPLUS

CN Pyrrolidinium, 1-butyl-1-methyl-, tetrafluoroborate(1-) (1:1) (CA INDEX NAME)

CM 1

CRN 223437-10-3

CMF C9 H20 N

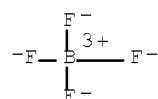


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



IPCI H01M0012-02 [I,A]  
 IPCR H01M0012-02 [I,A]  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST hybrid battery  
 IT Battery electrolytes  
     (hybrid battery)  
 IT Carbon black, uses  
     (hybrid battery)  
 IT Secondary batteries  
     (lithium; hybrid battery)  
 IT 7440-44-0, Activated carbon, uses  
     (activated; hybrid battery)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,  
 Propylene carbonate 429-06-1, Tetraethylammonium tetrafluoroborate  
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate  
 2567-83-1, Tetraethylammonium perchlorate 7439-93-2D, Lithium, salt  
 7791-03-9, Lithium perchlorate 12057-17-9, Lithium manganese  
 oxide (LiMn2O4) 14283-07-9, Lithium tetrafluoroborate  
 14798-03-9D, Ammonium, salt 15302-90-6D, salt  
 15312-12-6D, Dimethylpyrrolidinium, salt 39300-70-4, Lithium  
 nickel oxide 39457-42-6, Lithium manganese oxide 52627-24-4,  
 Cobalt lithium oxide 55526-39-1D, Pyrrolidinium, salt  
 90076-65-6 132843-44-8 143314-16-3 182442-95-1, Cobalt  
 lithium manganese nickel oxide 223437-10-3D, salt  
 345984-11-4 346417-97-8, Cobalt lithium manganese nickel  
 oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 937162-51-1 937162-52-2  
 937162-53-3, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.16</sub>Li<sub>1.1</sub>Mn<sub>0.37</sub>Ni<sub>0.37</sub>O<sub>2</sub>)  
     (hybrid battery)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS  
 RECORD (1 CITINGS)  
 REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L62 ANSWER 5 OF 11 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2006:1017308 HCAPLUS Full-text

DOCUMENT NUMBER: 146:444705

TITLE: Fast cycling of Li/LiCoO<sub>2</sub> cell with low-viscosity  
 ionic liquids based on  
 bis(fluorosulfonyl)imide [FSI]-

AUTHOR(S): Matsumoto, Hajime; Sakaebe, Hikari; Tatsumi,  
 Kuniaki; Kikuta, Manabu; Ishiko, Eriko; Kono,  
 Michiyuki

CORPORATE SOURCE: Research Institute for Ubiquitous Energy Devices,  
 National Institute of Advanced Industrial Science  
 and Technology (AIST), 1-8-31 Midorigaoka, Ikeda,  
 Osaka, 563-8577, Japan

SOURCE: Journal of Power Sources (2006), 160(2),  
 1308-1313  
 CODEN: JPSODZ; ISSN: 0378-7753

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 02 Oct 2006

AB Charge-discharge cycling tests of a Li/LiCoO<sub>2</sub> cell containing ionic liqs.  
 based on bis(fluorosulfonyl)imide ([FSI]-) as the electrolyte revealed better  
 rate properties than those of cells using conventional ionic liqs. The use of  
 an 1-ethyl-3-methylimidazolium (EMI<sup>+</sup>) salt permitted the retention of 70% of  
 the discharge capacity at a 4 C current rate. But similar performance of

10/584,379

cells containing N-methyl-N-propylpyrrolidinium (Py13+) and N-methyl-N-propylpiperidinium (PP13+) salts of [FSI]<sup>-</sup> was limited to operation at 2 and 1 C current rates, resp. The charge/discharge cycling stability of the cell with Py13[FSI] was much better than that of a cell with EMI[FSI].

IT 223437-05-6 852620-97-4

(fast cycling of Li/LiCoO<sub>2</sub> batteries with low-viscosity ionic liquid electrolytes based on (fluorosulfonyl)imide)

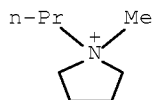
RN 223437-05-6 HCAPLUS

CN Pyrrolidinium, 1-methyl-1-propyl-, salt with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1) (CA INDEX NAME)

CM 1

CRN 108259-90-1

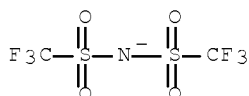
CMF C8 H18 N



CM 2

CRN 98837-98-0

CMF C2 F6 N O4 S2



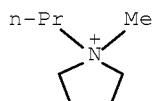
RN 852620-97-4 HCAPLUS

CN Pyrrolidinium, 1-methyl-1-propyl-, salt with imidodisulfuryl fluoride (1:1) (CA INDEX NAME)

CM 1

CRN 108259-90-1

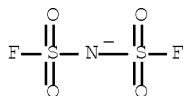
CMF C8 H18 N



CM 2

CRN 44821-49-0

CMF F2 N O4 S2



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST ionic liq fluorosulfonyl imide electrolyte lithium battery

IT Battery electrolytes  
 Ionic liquids  
 (fast cycling of Li/LiCoO<sub>2</sub> batteries with low-viscosity ionic liquid electrolytes based on (fluorosulfonyl)imide)

IT Secondary batteries  
 (lithium; fast cycling of Li/LiCoO<sub>2</sub> batteries with low-viscosity ionic liquid electrolytes based on (fluorosulfonyl)imide)

IT 7439-93-2, Lithium, uses  
 (anode; fast cycling of Li/LiCoO<sub>2</sub> batteries with low-viscosity ionic liquid electrolytes based on (fluorosulfonyl)imide)

IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 (cathode; fast cycling of Li/LiCoO<sub>2</sub> batteries with low-viscosity ionic liquid electrolytes based on (fluorosulfonyl)imide)

IT 174899-82-2 223437-05-6 235789-75-0, Imidodisulfuryl fluoride, ion(1-), 1-ethyl-3-methyl-1H-imidazolium 608140-12-1 852620-97-4 911303-46-3  
 (fast cycling of Li/LiCoO<sub>2</sub> batteries with low-viscosity ionic liquid electrolytes based on (fluorosulfonyl)imide)

IT 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide  
 (fast cycling of Li/LiCoO<sub>2</sub> batteries with low-viscosity ionic liquid electrolytes based on (fluorosulfonyl)imide)

OS.CITING REF COUNT: 118 THERE ARE 118 CAPLUS RECORDS THAT CITE THIS RECORD (118 CITINGS)

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 6 OF 11 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2006:950732 HCAPLUS Full-text

DOCUMENT NUMBER: 145:317989

TITLE: Nonaqueous electrolyte battery

INVENTOR(S): Saruwatari, Hidesato; Kishi, Takashi; Kuboki, Takashi; Takami, Norio

PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Japan

SOURCE: U.S. Pat. Appl. Publ., 13pp.



CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20060204855	A1	20060914	US 2006-337513	20060124
			<--	
JP 2006253081	A	20060921	JP 2005-71446	20050314
			<--	
JP 4519685	B2	20100804		
CN 1835272	A	20060920	CN 2006-10051573	20060306
			<--	
CN 100470920	C	20090318		
PRIORITY APPLN. INFO.:			JP 2005-71446	A 20050314
			<--	

# ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 15 Sep 2006

AB A nonaq. electrolyte battery, including a case, a pos. electrode housed in the case, a neg. electrode housed in the case, and a nonaq. electrolyte containing an ionic liquid and lithium ions of which molar amount is no smaller than  $1.8 \times 10^{-5}$  mol per mA-h of the battery capacity.

IT 12031-95-7, Lithium titanium oxide (Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>)

90076-65-6, Litfsi 909247-40-1

(nonaq. electrolyte battery)

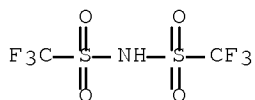
RN 12031-95-7 HCAPLUS

CN Lithium titanium oxide (Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	12	17778-80-2
Ti	5	7440-32-6
Li	4	7439-93-2

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



● Li

RN 909247-40-1 HCAPLUS

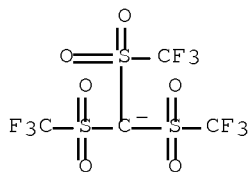
CN Pyrrolidinium, 1-methyl-1-propyl-, salt with tris[(trifluoromethyl)sulfonyl]methane (1:1) (CA INDEX NAME)

CM 1

CRN 130447-45-9

10/584,379

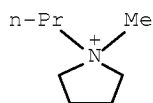
CMF C4 F9 O6 S3



CM 2

CRN 108259-90-1

CMF C8 H18 N

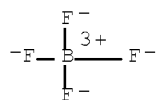


IT 14874-70-5, Tetrafluoroborate 16919-18-9,  
Hexafluorophosphate 37181-39-8 55526-39-1D,  
Pyrrolidinium, dialkyl derivative 108259-90-1  
125579-65-9

(nonaq. electrolyte battery)

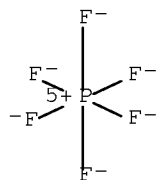
RN 14874-70-5 HCAPLUS

CN Borate(1-), tetrafluoro- (CA INDEX NAME)



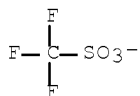
RN 16919-18-9 HCAPLUS

CN Phosphate(1-), hexafluoro- (CA INDEX NAME)



10/584,379

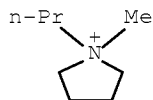
RN 37181-39-8 HCAPLUS  
CN Methanesulfonic acid, 1,1,1-trifluoro-, ion(1-) (CA INDEX NAME)



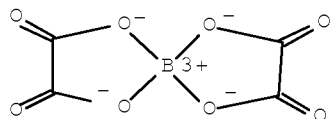
RN 55526-39-1 HCAPLUS  
CN Pyrrolidine, conjugate acid (1:1) (CA INDEX NAME)



RN 108259-90-1 HCAPLUS  
CN Pyrrolidinium, 1-methyl-1-propyl- (CA INDEX NAME)



RN 125579-65-9 HCAPLUS  
CN Borate(1-), bis[ethanedioato(2-)-κO1,κO2]-, (T-4)- (9CI)  
(CA INDEX NAME)



INCL 429324000; 429339000  
IPCI H01M0010-40 [I,A]  
IPCR H01M0010-40 [I,A]  
NCL 429/324.000; 429/339.000  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST nonaq electrolyte battery

IT Pyridinium compounds  
(alkyl; nonaq. electrolyte battery)

IT Secondary batteries  
(lithium; nonaq. electrolyte battery)

IT Carbon fibers, uses  
(mesophase pitch; nonaq. electrolyte battery)

IT Pitch fibers  
(mesophase, carbon; nonaq. electrolyte battery)

IT Battery electrolytes  
Ionic liquids  
(nonaq. electrolyte battery)

IT Onium compounds  
(piperidinium, dialkyl; nonaq. electrolyte battery)

IT Quaternary ammonium compounds, uses  
(tetraalkyl; nonaq. electrolyte battery)

IT 12031-95-7, Lithium titanium oxide (Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>) 12190-79-3,  
Cobalt lithium oxide (CoLiO<sub>2</sub>) 90076-65-6, Litfsi  
909247-40-1 909247-41-2  
(nonaq. electrolyte battery)

IT 14874-70-5, Tetrafluoroborate 16919-18-9,  
Hexafluorophosphate 17009-90-4, Imidazolium 17997-40-9  
37181-39-8 44629-17-6 45187-15-3, Perfluorobutanesulfonate  
55526-39-1D, Pyrrolidinium, dialkyl derivative 65039-03-4,  
1-Ethyl-3-methylimidazolium 98837-98-0 108259-90-1  
125579-65-9 129318-46-3 132843-44-8 143314-16-3,  
1-Ethyl-3-methylimidazoliumtetrafluoroborate 157310-70-8,  
1,2-Dimethyl-3-propylimidazolium 199658-41-8 221201-00-9  
365460-36-2 390358-97-1 429679-87-8 608140-11-0 909247-39-8  
(nonaq. electrolyte battery)

L62 ANSWER 7 OF 11 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2006:949857 HCAPLUS Full-text

DOCUMENT NUMBER: 145:317982

TITLE: Nonaqueous electrolyte secondary battery

INVENTOR(S): Ohzuku, Tsutomu; Yoshizawa, Hiroshi; Nakura, Kensuke

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan; Osaka City University

SOURCE: U.S. Pat. Appl. Publ., 30 pp., Cont.-in-part of U.S. Ser. No. 979,764.  
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 20060204847	A1	20060914	US 2006-430994	20060510
			<--	
US 7939200	B2	20110510		
JP 2005142047	A	20050602	JP 2003-377954	20031107
			<--	
JP 4554911	B2	20100929		
US 20050147889	A1	20050707	US 2004-979764	20041103
			<--	
US 7722989	B2	20100525		
KR 2006113872	A	20061103	KR 2006-100852	20061017
			<--	
KR 899504	B1	20090526		

10/584,379

PRIORITY APPLN. INFO.: JP 2003-377954 A 20031107  
 <--  
 US 2004-979764 A2 20041103  
 <--  
 KR 2004-89762 A3 20041105  
 <--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 15 Sep 2006

AB As an alternative technique to lead-acid batteries, the present invention provides an inexpensive 2 V nonaq. electrolyte secondary battery having excellent cycle life at a high rate by preventing volume change during charge and discharge. The nonaq. electrolyte secondary battery uses: a pos. ~~electrode~~ active material having a layered structure, being represented by chemical formula  $\text{Li}_{1+\alpha}[\text{Me}]_2\text{O}_2$ , where  $0 \leq \alpha < 0.2$ , and Me is a transition metal including Ni and at least one selected from the group consisting of Mn, Fe, Co, Ti and Cu, and including elemental nickel and elemental cobalt in substantially the same ratio; and a neg. ~~electrode~~ active material including  $\text{Li}_4\text{Ti}_5\text{O}_{12}$ .

IT 12031-95-7, Lithium titanium oxide ( $\text{Li}_4\text{Ti}_5\text{O}_{12}$ )  
 14283-07-9, Lithium tetrafluoroborate 21324-40-3,  
 Lithium hexafluorophosphate  
 (nonaq. electrolyte secondary battery)

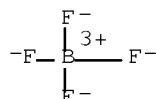
RN 12031-95-7 HCAPLUS

CN Lithium titanium oxide ( $\text{Li}_4\text{Ti}_5\text{O}_{12}$ ) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	12	17778-80-2
Ti	5	7440-32-6
Li	4	7439-93-2

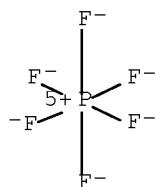
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



RN 21324-40-3 HCAPLUS

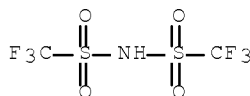
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



IT 55526-39-1, Pyrrolidinium 82113-65-3  
 (nonaq. electrolyte secondary battery)  
 RN 55526-39-1 HCAPLUS  
 CN Pyrrolidine, conjugate acid (1:1) (CA INDEX NAME)



RN 82113-65-3 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
 (CA INDEX NAME)



INCL 429223000; 429231100; 429221000; 429231300; 429220000; 429231500;  
 429224000; 429339000; 429337000; 429338000; 429340000; 429200000;  
 429342000; 429341000  
 IPCI H01M0004-52 [I,A]; H01M0004-50 [I,A]; H01M0010-40 [I,A]; H01M0004-131  
 [I,A]; H01M0004-485 [I,A]; H01M0004-505 [I,A]; H01M0004-525 [I,A]  
 IPCR H01M0004-52 [I,A]; H01M0004-66 [I,A]; H01M0002-16 [I,A]; H01M0004-02  
 [I,A]; H01M0004-48 [I,A]; H01M0004-50 [I,A]; H01M0004-58 [I,A];  
 H01M0010-38 [I,A]; H01M0010-40 [I,A]  
 NCL 429/223.000; 429/200.000; 429/220.000; 429/221.000; 429/224.000;  
 429/231.100; 429/231.300; 429/231.500; 429/337.000; 429/338.000;  
 429/339.000; 429/340.000; 429/341.000; 429/342.000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 49  
 ST nonaq electrolyte secondary battery  
 IT Polyamide fibers  
 (aramid; nonaq. electrolyte secondary battery)  
 IT Battery cathodes

Ionic liquids  
 Nonwoven fabrics  
 Secondary batteries  
 Secondary battery separators  
 (nonaq. electrolyte secondary battery)  
 IT Polyamide fibers  
 Polyesters  
 Vinal fibers  
 (nonaq. electrolyte secondary battery)  
 IT Amides  
 (nonaq. electrolyte secondary battery)  
 IT Halides  
 (nonaq. electrolyte secondary battery)  
 IT Imides  
 (nonaq. electrolyte secondary battery)  
 IT Sulfonic acids  
 (salts; nonaq. electrolyte secondary battery)  
 IT Aluminum alloy, base  
 (nonaq. electrolyte secondary battery)  
 IT 75-05-8, Acetonitrile, uses 78-40-0, Triethyl phosphate 96-48-0,  
 $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 96-49-1D,  
 Ethylene carbonate, fluorinated 108-29-2,  $\gamma$ -Valerolactone  
 108-32-7, Propylene carbonate 111-96-6, Methyldiglyme 126-33-0,  
 Sulfolane 512-56-1, Trimethyl phosphate 7429-90-5, Aluminum, uses  
 7440-50-8, Copper, uses 9002-88-4, Polyethylene 9003-07-0,  
 Polypropylene 12031-95-7, Lithium titanium oxide  
 (Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>) 13463-67-7, Titanium oxide, uses 14283-07-9,  
 Lithium tetrafluoroborate 21324-40-3, Lithium  
 hexafluorophosphate 24968-12-5, Polybutylene terephthalate  
 25038-59-9, uses 35466-86-5 131344-56-4, Cobalt lithium nickel  
 oxide 909034-11-3, Cobalt lithium nickel oxide  
 (Co<sub>0.5</sub>Li<sub>0.9</sub>-1.1Ni<sub>0.5</sub>O<sub>2</sub>) 909034-12-4, Cobalt lithium nickel oxide  
 (Co<sub>0.33</sub>Li<sub>0.9</sub>-1.1Ni<sub>0.33</sub>O<sub>2</sub>)  
 (nonaq. electrolyte secondary battery)  
 IT 74-84-0, Ethane, uses 3398-75-2, Decanoate 11129-12-7, Borate  
 14265-44-2, Phosphate, uses 14798-03-9, Ammonium, uses 14808-79-8,  
 Sulfate, uses 16749-13-6, Phosphonium 16969-45-2, Pyridinium  
 17009-90-4, Imidazolium 20064-29-3, Trimethylpropylammonium  
 25215-10-5, Guanidinium 37264-96-3, Cobalt carbonyl 39349-74-1,  
 Antimonate 55526-39-1, Pyrrolidinium 65039-03-4,  
 1-Ethyl-3-methylimidazolium 82113-65-3  
 (nonaq. electrolyte secondary battery)  
 OS.CITING REF COUNT: 9 THERE ARE 9 CAPLUS RECORDS THAT CITE THIS  
 RECORD (10 CITINGS)

L62 ANSWER 8 OF 11 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2006:301494 HCAPLUS Full-text

DOCUMENT NUMBER: 144:334258

TITLE: Nonaqueous electrolyte battery

INVENTOR(S): Kishi, Takashi; Kuboki, Takashi; Saruwatari,  
 Hidesato; Takami, Norio

PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Japan

SOURCE: U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 20060068282	A1	20060330	US 2005-179585	20050713
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US 7883797	B2	20110208		
JP 2006092974	A	20060406	JP 2004-278280	20040924
			<--	
JP 4198658	B2	20081217		
CN 1753233	A	20060329	CN 2005-10107516	20050923
			<--	
CN 100511815	C	20090708		
KR 2006051575	A	20060519	KR 2005-88670	20050923
			<--	
KR 837450	B1	20080612		
PRIORITY APPLN. INFO.:			JP 2004-278280	A 20040924
			<--	

# ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

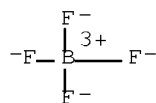
ED Entered STN: 31 Mar 2006

AB A nonaq. electrolyte battery that contains a molten salt electrolyte and has the enhanced output performances and cycle performances can be provided. The electrolyte has a molar ratio of lithium salt to molten salt of from 0.3 to 0.5, and the nonaq. electrolyte battery has a pos. electrode having a discharge capacity of 1.05 or more times that of a neg. electrode thereof.

IT 14283-07-9, Lithium tetrafluoroborate 14874-70-5  
 , Tetrafluoroborate 16919-18-9, Hexafluorophosphate  
 21324-40-3, Lithium hexafluorophosphate 33454-82-9  
 , Lithium triflate 37181-39-8, Triflate  
 55526-39-1, Pyrrolidinium 90076-65-6, Lithium  
 bis(trifluoromethanesulfonyl)imide  
 (nonaq. electrolyte battery)

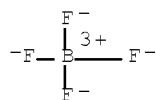
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



RN 14874-70-5 HCAPLUS

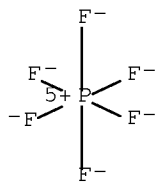
CN Borate(1-), tetrafluoro- (CA INDEX NAME)



RN 16919-18-9 HCAPLUS

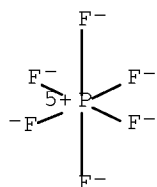
CN Phosphate(1-), hexafluoro- (CA INDEX NAME)





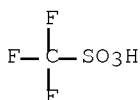
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



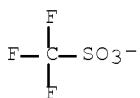
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



RN 37181-39-8 HCAPLUS

CN Methanesulfonic acid, 1,1,1-trifluoro-, ion(1-) (CA INDEX NAME)

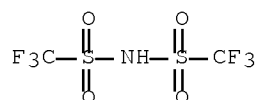


RN 55526-39-1 HCAPLUS

CN Pyrrolidine, conjugate acid (1:1) (CA INDEX NAME)



RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
 lithium salt (1:1) (CA INDEX NAME)



INCL 429188000; 429231100; 429231500; 429221000; 429199000  
 IPCI H01M0010-39 [I,A]; H01M0004-58 [I,A]; H01M0004-48 [I,A]; H01M0004-58  
 [I,A]  
 IPCR H01M0010-39 [I,A]; H01M0004-48 [I,A]; H01M0004-58 [I,A]  
 NCL 429/188.000; 429/199.000; 429/221.000; 429/231.100; 429/231.500;  
 429/101.000; 429/103.000; 429/223.000; 429/224.000; 429/231.300;  
 429/231.950; 429/232.000; 429/322.000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery molten salt electrolyte  
 IT Quaternary ammonium compounds, uses  
 (aromatic; nonaq. electrolyte battery)  
 IT Salts, uses  
 (molten; nonaq. electrolyte battery)  
 IT Battery electrolytes  
 Secondary batteries  
 (nonaq. electrolyte battery)  
 IT Carbonaceous materials (technological products)  
 Polyesters, uses  
 Polyolefins  
 (nonaq. electrolyte battery)  
 IT 1332-29-2, Tin oxide 7439-93-2, Lithium, uses 7439-93-2D, Lithium,  
 salt 11104-61-3, Cobalt oxide 11126-12-8, Iron sulfide  
 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) 12798-95-7  
 14283-07-9, Lithium tetrafluoroborate 14874-70-5,  
 Tetrafluoroborate 16919-18-9, Hexafluorophosphate  
 17523-59-0, Piperidinium 21324-40-3, Lithium  
 hexafluorophosphate 25038-59-9, uses 33454-82-9, Lithium  
 triflate 37181-39-8, Triflate 39300-70-4, Lithium nickel  
 oxide 39302-37-9, Lithium titanate 39457-42-6, Lithium manganese  
 oxide 44629-17-6 45187-15-3, Perfluorobutanesulfonate  
 52627-24-4, Cobalt lithium oxide 55526-39-1, Pyrrolidinium  
 65039-03-4, 1-Ethyl-3-methyl-imidazolium 80432-06-0,  
 1-Methyl-3-propyl-imidazolium 80432-08-2,

10/584,379

1-Butyl-3-methylimidazolium 90076-65-6, Lithium  
 bis(trifluoromethanesulfonyl)imide 94530-91-3 98837-98-0  
 129318-46-3 131097-15-9, 1-Ethyl-2,3-dimethylimidazolium  
 132843-44-8, Lithium bis(pentafluoroethanesulfonyl)amide  
 143314-16-3, 1-Ethyl-3-methylimidazolium tetrafluoroborate  
 174899-73-1 174899-82-2, 1-Ethyl-3-methylimidazolium  
 bis(trifluoromethanesulfonyl)amide 195199-57-6, Lithium dicyanamide  
 230627-60-8 365460-36-2 390358-97-1 390750-60-4 390750-62-6  
 429679-87-8 658693-67-5, Lithium titanium oxide (Li1.3Ti1.7O4)  
 (nonaq. electrolyte battery)

OS.CITING REF COUNT: 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS  
 RECORD (7 CITINGS)

L62 ANSWER 9 OF 11 HCAPLUS COPYRIGHT 2011 ACS on STN  
 ACCESSION NUMBER: 2005:612617 HCAPLUS Full-text  
 DOCUMENT NUMBER: 143:118081  
 TITLE: Electrochemical element for use at high  
 temperatures  
 INVENTOR(S): Best, Adam Samuel; Landheer, Hiske; Ooms,  
 Franciscus Guentherus Bernardus  
 PATENT ASSIGNEE(S): Shell Internationale Research Maatschappij B.V.,  
 Neth.; Shell Canada Limited  
 SOURCE: PCT Int. Appl., 41 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005064733	A1	20050714	WO 2004-EP53182	20041130
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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2004309904	A1	20050714	AU 2004-309904	20041130
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AU 2004309904	B2	20080403		
CA 2552230	A1	20050714	CA 2004-2552230	20041130
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GB 2424751	A	20061004	GB 2006-12515	20041130
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GB 2424751	B	20070606		
CN 1906795	A	20070131	CN 2004-80040707	20041130
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CN 100468856	C	20090311		
BR 2004018225	A	20070427	BR 2004-18225	20041130
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JP 2007517364	T	20070628	JP 2006-546146	20041130
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10/584,379

KR 2007001118	A	20070103	KR 2006-7015528	20060731
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US 20070254213	A1	20071101	US 2007-584379	20070411
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PRIORITY APPLN. INFO.:			EP 2003-104985	A 20031229
			<--	
			WO 2004-EP53182	W 20041130
			<--	

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 15 Jul 2005

AB An electrochem. element for use at a high temperature has an anode , a cathode comprising an intercalation material having an upper reversible-potential-limit of at most 4 V vs. Li/Li+ as active material, and an electrolyte arranged between the cathode and anode, which electrolyte comprises an ionic liquid with an anion and a cation comprising a pyrrolidinium ring structure having four C atoms and one N atom. Expts. revealed that rechargeable batteries comprising such an intercalation material and N-R1-N-R2-pyrrolidinium, wherein R1 and R2 are alkyl groups and R1 may be Me and R2 may be Bu or hexyl, are particularly suitable for use at a temperature of up to about 150° and may be used in oil and/or gas production wells.

IT 371-77-7D, compound 1314-62-1, Vanadium oxide (V2O5), uses 5347-82-0D, compound 7791-03-9, Lithium perchlorate 10034-81-8, Magnesium perchlorate 12017-97-9, Chromium lithium titanium oxide (CrLiTiO4) 12031-92-4, Lithium manganese oxide (Li4Mn5O12) 12031-95-7, Lithium titanium oxide (Li4Ti5O12) 14283-07-9, Lithium tetrafluoroborate 14797-73-0D, Perchlorate, compound 14874-70-5D, Tetrafluoroborate, compound 16919-18-9D, Hexafluorophosphate, compound 16973-45-8D, Hexafluoroarsenate, compound 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 37181-39-8D, Triflate, compound 37217-08-6, Lithium titanium oxide (LiTi2O4) 55526-39-1D, Pyrrolidinium, compound 82113-65-3D, compound 90076-65-6 125579-65-9D, compound 130447-45-9D, compound 132404-42-3 152894-10-5D, compound 223437-10-3D, 1-Butyl-1-methylPyrrolidinium, compound 330671-30-2D, compound 857631-30-2, Lithium magnesium titanium oxide (Li3-4Mg0-1Ti5O12) 857631-31-3, Lithium magnesium manganese oxide (Li3-4Mg0-1Mn5O12) 857631-32-4, Iron lithium magnesium phosphate (FeLi0.98-1Mg0-0.02(PO4)) 857631-33-5, Iron lithium niobium phosphate (FeLi0.98-1Nb0-0.02(PO4)) 857631-34-6, Iron lithium zirconium phosphate (FeLi0.98-1Zr0-0.02(PO4)) 857631-36-8, Aluminum iron lithium phosphate (Al0-0.02FeLi0.98-1(PO4)) (electrochem. element for use at high temps.)

RN 371-77-7 HCAPLUS

CN Methanamine, 1,1,1-trifluoro-N-(trifluoromethyl)- (CA INDEX NAME)

F3C—NH—CF3

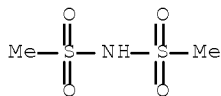
RN 1314-62-1 HCAPLUS

CN Vanadium oxide (V2O5) (CA INDEX NAME)

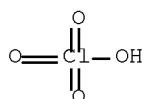
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

10/584,379

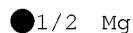
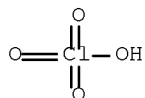
RN 5347-82-0 HCAPLUS  
CN Methanesulfonamide, N-(methylsulfonyl)- (CA INDEX NAME)



RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



RN 10034-81-8 HCAPLUS  
CN Perchloric acid, magnesium salt (2:1) (CA INDEX NAME)



RN 12017-97-9 HCAPLUS  
CN Chromium lithium titanium oxide (CrLiTiO<sub>4</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Cr	1	7440-47-3
Ti	1	7440-32-6
Li	1	7439-93-2

RN 12031-92-4 HCAPLUS  
CN Lithium manganese oxide (Li<sub>4</sub>Mn<sub>5</sub>O<sub>12</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Mn	5	7439-96-5

10/584,379

Li | 4 | 7439-93-2

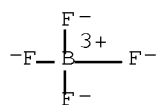
RN 12031-95-7 HCAPLUS

CN Lithium titanium oxide (Li4Ti5O12) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Ti	5	7440-32-6
Li	4	7439-93-2

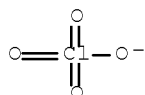
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



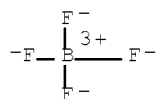
RN 14797-73-0 HCAPLUS

CN Perchlorate (8CI, 9CI) (CA INDEX NAME)



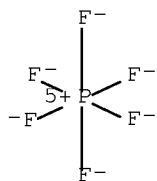
RN 14874-70-5 HCAPLUS

CN Borate(1-), tetrafluoro- (CA INDEX NAME)

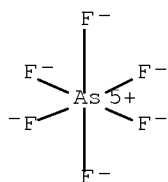


RN 16919-18-9 HCAPLUS

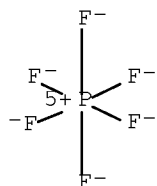
CN Phosphate(1-), hexafluoro- (CA INDEX NAME)



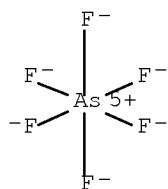
RN 16973-45-8 HCAPLUS  
 CN Arsenate(1-), hexafluoro- (CA INDEX NAME)



RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

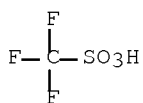


RN 29935-35-1 HCAPLUS  
 CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

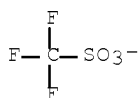


10/584,379

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



RN 37181-39-8 HCAPLUS  
 CN Methanesulfonic acid, 1,1,1-trifluoro-, ion(1-) (CA INDEX NAME)



RN 37217-08-6 HCAPLUS  
 CN Lithium titanium oxide (LiTi<sub>2</sub>O<sub>4</sub>) (CA INDEX NAME)

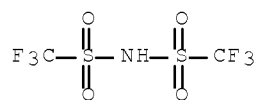
Component		Ratio		Component
				Registry Number
O		4		17778-80-2
Ti		2		7440-32-6
Li		1		7439-93-2

RN 55526-39-1 HCAPLUS  
 CN Pyrrolidine, conjugate acid (1:1) (CA INDEX NAME)



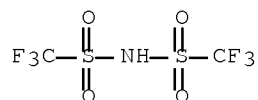
RN 82113-65-3 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
 (CA INDEX NAME)





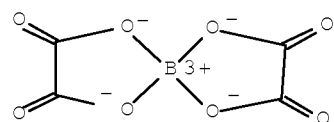
RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
lithium salt (1:1) (CA INDEX NAME)



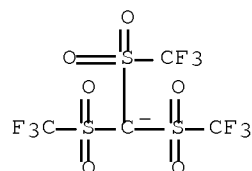
RN 125579-65-9 HCAPLUS

CN Borate(1-), bis[ethanedioato(2-)-κO1,κO2]-, (T-4)- (9CI)  
(CA INDEX NAME)



RN 130447-45-9 HCAPLUS

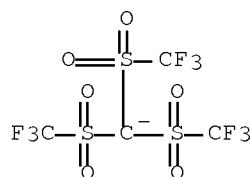
CN Methane, tris[(trifluoromethyl)sulfonyl]-, ion(1-) (CA INDEX NAME)



RN 132404-42-3 HCAPLUS

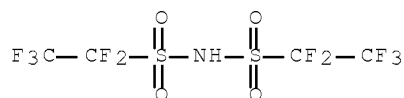
CN Methane, tris[(trifluoromethyl)sulfonyl]-, ion(1-), lithium (1:1) (CA  
INDEX NAME)

10/584,379



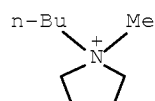
RN 152894-10-5 HCAPLUS

CN Ethanesulfonamide, 1,1,2,2,2-pentafluoro-N-[(1,1,2,2,2-pentafluoroethyl)sulfonyl]- (CA INDEX NAME)



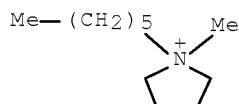
RN 223437-10-3 HCAPLUS

CN Pyrrolidinium, 1-butyl-1-methyl- (CA INDEX NAME)



RN 330671-30-2 HCAPLUS

CN Pyrrolidinium, 1-hexyl-1-methyl- (CA INDEX NAME)



RN 857631-30-2 HCAPLUS

CN Lithium magnesium titanium oxide (Li3-4Mg0-1Ti5O12) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	12	17778-80-2
Ti	5	7440-32-6

10/584,379

Mg		0 - 1		7439-95-4
Li		3 - 4		7439-93-2

RN 857631-31-3 HCAPLUS

CN Lithium magnesium manganese oxide (Li<sub>3</sub>-4Mg<sub>0</sub>-1Mn<sub>5</sub>O<sub>12</sub>) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
=====	+	=====	+	=====
O		12		17778-80-2
Mn		5		7439-96-5
Mg		0 - 1		7439-95-4
Li		3 - 4		7439-93-2

RN 857631-32-4 HCAPLUS

CN Iron lithium magnesium phosphate (FeLi<sub>0.98</sub>-1Mg<sub>0</sub>-0.02(PO<sub>4</sub>)) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
=====	+	=====	+	=====
O4P		1		14265-44-2
Mg		0 - 0.02		7439-95-4
Li		0.98 - 1		7439-93-2
Fe		1		7439-89-6

RN 857631-33-5 HCAPLUS

CN Iron lithium niobium phosphate (FeLi<sub>0.98</sub>-1Nb<sub>0</sub>-0.02(PO<sub>4</sub>)) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
=====	+	=====	+	=====
O4P		1		14265-44-2
Nb		0 - 0.02		7440-03-1
Li		0.98 - 1		7439-93-2
Fe		1		7439-89-6

RN 857631-34-6 HCAPLUS

CN Iron lithium zirconium phosphate (FeLi<sub>0.98</sub>-1Zr<sub>0</sub>-0.02(PO<sub>4</sub>)) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
=====	+	=====	+	=====
O4P		1		14265-44-2
Zr		0 - 0.02		7440-67-7
Li		0.98 - 1		7439-93-2
Fe		1		7439-89-6

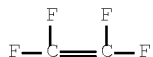
RN 857631-36-8 HCAPLUS

CN Aluminum iron lithium phosphate (Al<sub>0</sub>-0.02FeLi<sub>0.98</sub>-1(PO<sub>4</sub>)) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
=====	+	=====	+	=====
O4P		1		14265-44-2
Li		0.98 - 1		7439-93-2
Fe		1		7439-89-6

Al | 0 - 0.02 | 7429-90-5

IT 9002-84-0, Ptfе 24937-79-9, Pvdф  
 (electrochem. element for use at high temps.)  
 RN 9002-84-0 HCAPLUS  
 CN Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME)  
 CM 1  
 CRN 116-14-3  
 CMF C2 F4



RN 24937-79-9 HCAPLUS  
 CN Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)  
 CM 1  
 CRN 75-38-7  
 CMF C2 H2 F2



IPCI H01M0010-40 [ICM,7]; H01M0010-39 [ICS,7]; H01M0010-36 [ICS,7];  
 H01M0006-14 [ICS,7]; H01M0006-16 [ICS,7]; H01G0009-02 [ICS,7]  
 IPCR H01G0009-02 [I,A]; H01G0009-022 [I,A]; H01M0004-48 [N,A]; H01M0004-485  
 [N,A]; H01M0004-58 [N,A]; H01M0006-14 [I,A]; H01M0006-16 [I,A];  
 H01M0010-052 [I,A]; H01M0010-0566 [I,A]; H01M0010-36 [I,A];  
 H01M0010-39 [I,A]  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 51, 72, 76  
 ST battery high temp use oil gas well  
 IT Electrolytic capacitors  
 Geothermal wells  
 Ionic liquids  
 Natural gas wells  
 Oil wells  
 Primary batteries  
 Secondary batteries  
 (electrochem. element for use at high temps.)  
 IT 371-77-7D, compound 1314-62-1, Vanadium oxide  
 (V2O5), uses 5347-82-0D, compound 7439-93-2, Lithium, uses  
 7439-93-2D, Lithium, salt 7791-03-9, Lithium perchlorate  
 10034-81-8, Magnesium perchlorate 12017-97-9,  
 Chromium lithium titanium oxide (CrLiTiO4) 12031-92-4,  
 Lithium manganese oxide (Li4Mn5O12) 12031-95-7, Lithium  
 titanium oxide (Li4Ti5O12) 12039-13-3, Titanium sulfide (TiS2)  
 14283-07-9, Lithium tetrafluoroborate 14797-73-0D,  
 Perchlorate, compound 14874-70-5D, Tetrafluoroborate, compound

16919-18-9D, Hexafluorophosphate, compound 16973-45-8D  
 , Hexafluoroarsenate, compound 21324-40-3, Lithium  
 hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate  
 33454-82-9, Lithium triflate 37181-39-8D,  
 Triflate, compound 37217-08-6, Lithium titanium oxide  
 (LiTi2O4) 55526-39-1D, Pyrrolidinium, compound  
 82113-65-3D, compound 90076-65-6  
 125579-65-9D, compound 130447-45-9D, compound  
 132404-42-3 152894-10-5D, compound 175786-46-6,  
 Lithium magnesium manganese oxide 180984-63-8, Lithium magnesium  
 titanium oxide 223437-10-3D,  
 1-Butyl-1-methylPyrrolidinium, compound 244761-29-3, Lithium  
 bis(oxalato)borate 330671-30-2D, compound  
 857631-30-2, Lithium magnesium titanium oxide  
 (Li3-4Mg0-1Ti5O12) 857631-31-3, Lithium magnesium  
 manganese oxide (Li3-4Mg0-1Mn5O12) 857631-32-4, Iron  
 lithium magnesium phosphate (FeLi0.98-1Mg0-0.02(PO4))  
 857631-33-5, Iron lithium niobium phosphate  
 (FeLi0.98-1Nb0-0.02(PO4)) 857631-34-6, Iron lithium  
 zirconium phosphate (FeLi0.98-1Zr0-0.02(PO4)) 857631-35-7, Iron  
 lithium titanium phosphate (FeLi0.98-1Ti0-0.02(PO4))  
 857631-36-8, Aluminum iron lithium phosphate  
 (Al0-0.02FeLi0.98-1(PO4))

(electrochem. element for use at high temps.)

IT 9002-84-0, Ptfе 24937-79-9, Pvdф

(electrochem. element for use at high temps.)

OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS  
 RECORD (3 CITINGS)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L62 ANSWER 10 OF 11 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2005:402673 HCAPLUS Full-text

DOCUMENT NUMBER: 142:466432

TITLE: Secondary battery with non-aqueous  
 electrolyte

INVENTOR(S): Ohzuku, Tsutomu; Yoshizawa, Hiroshi; Nakura,  
 Kensuke

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan;  
 Osaka City University

SOURCE: Eur. Pat. Appl., 32 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
EP 1530248	A2	20050511	EP 2004-256668	20041028
			<--	
EP 1530248	A3	20080903		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
JP 2005142047	A	20050602	JP 2003-377954	20031107
			<--	
JP 4554911	B2	20100929		
KR 2005044279	A	20050512	KR 2004-89762	20041105

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KR 756169	B1	20070905		
CN 1614808	A	20050511	CN 2004-10092311	20041108
			<--	
CN 100337363	C	20070912		
KR 2006113872	A	20061103	KR 2006-100852	20061017
			<--	
KR 899504	B1	20090526		
JP 2010165688	A	20100729	JP 2010-59861	20100316
			<--	
PRIORITY APPLN. INFO.:			JP 2003-377954	A 20031107
			<--	
			KR 2004-89762	A3 20041105
			<--	

ED Entered STN: 12 May 2005

AB As an alternative for Pb-acid batteries, an inexpensive 2 V nonaq. electrolyte-based secondary battery is presented. The battery has a good cycle lifetime at high rates due to prevention of volume changes during charging and discharging. This secondary battery has a cathode-active material with a layered structure, represented by  $\text{Li}_{1+\alpha}\text{[Me]O}_2$ , where  $0 \leq \alpha < 0.2$ , and Me is a transition metal including Ni and at least one selected from Mn, Fe, Co, Ti and Cu, and including elemental Ni and elemental Co in substantially the same ratio. The battery also has an anode-active material,  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  ( $\text{Li}[\text{Li}_{1/3}\text{Ti}_{5/3}]\text{O}_4$ ).

IT 12031-95-7, Lithium titanate ( $\text{Li}_4\text{Ti}_5\text{O}_{12}$ )  
(anode containing; in secondary battery with non-aqueous electrolyte)

RN 12031-95-7 HCAPLUS

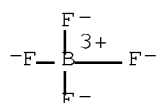
CN Lithium titanium oxide ( $\text{Li}_4\text{Ti}_5\text{O}_{12}$ ) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	12	17778-80-2
Ti	5	7440-32-6
Li	4	7439-93-2

IT 14283-07-9 21324-40-3, Lithium hexafluorophosphate ( $\text{LiPF}_6$ )  
(electrolyte; in secondary battery with non-aqueous electrolyte)

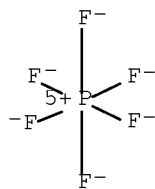
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



IT 55526-39-1, Pyrrolidinium  
 (electrolyte; secondary battery with non-aqueous electrolyte)  
 RN 55526-39-1 HCAPLUS  
 CN Pyrrolidine, conjugate acid (1:1) (CA INDEX NAME)



IPCI H01M0004-48 [I,A]; H01M0004-50 [I,A]; H01M0004-52 [I,A]  
 IPCR H01M0004-66 [I,A]; H01M0002-16 [I,A]; H01M0004-02 [I,A]; H01M0004-48  
 [I,A]; H01M0004-50 [I,A]; H01M0004-52 [I,A]; H01M0004-58 [I,A];  
 H01M0010-38 [I,A]; H01M0010-40 [I,A]  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST secondary battery nonaq electrolyte anode  
 cathode  
 IT Halides  
 (in non-aqueous electrolyte for secondary battery)  
 IT Polyesters  
 (in secondary battery with non-aqueous electrolyte)  
 IT Sulfonic acids  
 (salts; in non-aqueous electrolyte for secondary battery)  
 IT Battery anodes  
 Battery cathodes  
 Battery electrolytes  
 Secondary batteries  
 (secondary battery with non-aqueous electrolyte)  
 IT Polyamide fibers  
 Vinal fibers  
 (separator; in secondary battery with non-aqueous  
 electrolyte)  
 IT Aluminum alloy, base  
 (current collector; in secondary battery with non-aqueous  
 electrolyte)  
 IT 12031-95-7, Lithium titanate (Li4Ti5O12)  
 (anode containing; in secondary battery with  
 non-aqueous electrolyte)  
 IT 11113-67-0, Iron lithium oxide 39302-37-9, Lithium titanium oxide

39457-42-6, Lithium manganese oxide      52627-24-4, Cobalt lithium oxide  
104708-77-2, Copper lithium oxide

(cathode containing; in secondary battery with non-aqueous electrolyte)

IT 7439-95-4, Magnesium, uses 7440-24-6, Strontium, uses 7440-64-4,  
Ytterbium, uses 7440-65-5, Yttrium, uses 7440-70-2, Calcium, uses

(cathode containing; in secondary battery with non-aqueous electrolyte)

IT 131344-56-4P, Cobalt lithium nickel oxide 182442-95-1P, Cobalt lithium manganese nickel oxide

(cathode containing; in secondary battery with non-aqueous electrolyte)

IT 7429-90-5, Aluminum, uses

(current collector, cathode containing; in secondary battery with non-aqueous electrolyte)

IT 7440-50-8, Copper, uses

(current collector; in secondary battery with non-aqueous electrolyte)

IT 78-40-0, Triethyl phosphate 96-48-0 96-49-1, Ethylene carbonate  
96-49-1D, Ethylene carbonate, fluorinated 105-58-8, Diethyl  
carbonate 108-29-2 108-32-7, Propylene carbonate 111-32-0  
126-33-0, Sulpholane 512-56-1, Trimethyl phosphate 623-53-0, Ethyl  
methyl carbonate 35466-86-5 114435-02-8, Fluoroethylene carbonate  
174899-82-2 268536-05-6

(electrolyte containing; in secondary battery with non-aqueous electrolyte)

IT 14283--07-9 21324--40--3, Lithium  
hexafluorophosphate (LiPF6)

(electrolyte; in secondary battery with non-aqueous electrolyte)

IT 14798-03-9, Ammonium, uses 16749-13-6, Phosphonium 16969-45-2,  
Pyridinium 17009-90-4, Imidazolium 25215-10-5, Guanidinium  
~~55526-39-1~~, Pyrrolidinium

(electrolyte; secondary battery with non-aqueous electrolyte)

IT 334-48-5, Decanoic acid 11129-12-7, Borate 14265-44-2, Phosphate, uses 14808-79-8, Sulfate, uses 17655-31-1, Amide 39349-74-1, Antimonate 58207-38-8

(in non-aqueous electrolyte for secondary battery)

IT 147098-72-4, Cobalt nickel hydroxide ( $\text{Co}_{0.5}\text{Ni}_{0.5}(\text{OH})_2$ ) 602297-52-9,  
Cobalt manganese nickel hydroxide ( $\text{Co}_{0.33}\text{Mn}_{0.33}\text{Ni}_{0.33}(\text{OH})_2$ )

(in preparation of cathode material for secondary battery with non-aqueous electrolyte)

IT 9003-07-0, Polypropylene

(in secondary battery with non-aqueous electrolyte)

IT 9002-88-4, Polyethylene terephthalate 25038-59-9, uses 26062-94-2, Polybutylene

(separator; in secondary battery with non-aqueous electrolyte)

OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS  
RECORD (9 CITINGS)

L62 ANSWER 11 OF 11 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2003:396162 HCAPLUS Full-text

DOCUMENT NUMBER: 138:408292

TITLE: Electrochemical process for producing ionic liquids

INVENTOR(S) : Moulton, Roger

PATENT ASSIGNEE(S): Sachem, Inc., USA

SOURCE: U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO



DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030094380	A1	20030522	US 2001-990651	20011121
			<--	
US 6991718	B2	20060131		
CA 2467461	A1	20030605	CA 2002-2467461	20021118
			<--	
WO 2003046257	A1	20030605	WO 2002-US36907	20021118
			<--	
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
AU 2002365547	A1	20030610	AU 2002-365547	20021118
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AU 2002365547	B2	20070705		
EP 1456435	A1	20040915	EP 2002-803985	20021118
			<--	
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK			
CN 1630737	A	20050622	CN 2002-825144	20021118
			<--	
CN 100366799	C	20080206		
JP 2005529232	T	20050929	JP 2003-547683	20021118
			<--	
IL 162061	A	20070308	IL 2002-162061	20021118
			<--	
KR 965020	B1	20100621	KR 2004-7007671	20021118
			<--	
TW 255205	B	20060521	TW 2002-133940	20021121
			<--	
ZA 2004003819	A	20051004	ZA 2004-3819	20040518
			<--	
IN 2004CN01109	A	20060203	IN 2004-CN1109	20040518
			<--	
PRIORITY APPLN. INFO.:			US 2001-990651	A 20011121
			<--	
			WO 2002-US36907	W 20021118
			<--	

# ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 23 May 2003

AB The present invention relates to an electrochem. process for producing ionic liqs. The ionic liqs. may be hydrophilic or hydrophobic ionic liqs. The ionic liqs. are made by subjecting an electrochem. cell to electrolysis.

IT 327022-59-3, N-Methyl-N-propylpyrrolidinium tetrafluoroborate  
 (electrochem. process for producing ionic liqs  
 .)

RN 327022-59-3 HCAPLUS

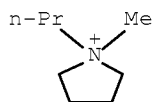
CN Pyrrolidinium, 1-methyl-1-propyl-, tetrafluoroborate(1-) (1:1) (CA

INDEX NAME)

CM 1

CRN 108259-90-1

CMF C8 H18 N

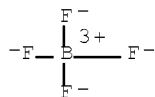


CM 2

CRN 14874-70-5

CMF B F4

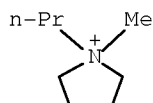
CCI CCS



IT 528818-82-8, N-Methyl-N-propylpyrrolidinium chloride  
(use in electrochem. process for producing ionic  
liqs.)

RN 528818-82-8 HCAPLUS

CN Pyrrolidinium, 1-methyl-1-propyl-, chloride (1:1) (CA INDEX NAME)



INCL 205431000; X20-555.1; X20-453.7; X20-453.8

IPCI C25B0003-00 [I,A]

IPCR B01D0061-44 [I,A]; C25B0001-00 [I,A]; C25B0003-00 [I,A]

NCL 205/431.000; 204/537.000; 204/538.000; 205/551.000; 205/413.000;  
205/444.000

CC 72-9 (Electrochemistry)

Section cross-reference(s): 28, 48

ST electrochem producing ionic liq

IT Membranes, nonbiological

(bipolar; electrochem. process for producing ionic liqs. using)

IT Anodes  
(dimensionally stable anodes; electrochem. process for producing ionic liqs. in electrolyzer with)

IT Ionic liquids  
(electrochem. process for producing)

IT Electrolysis  
(electrochem. process for producing ionic liqs .)

IT Anion exchange membranes  
Cation exchange membranes  
(electrochem. process for producing ionic liqs. using)

IT 12645-46-4, Iridium oxide  
(anode in electrolyzer electrochem. process for producing ionic liqs.)

IT 7440-02-0, Nickel, uses  
(cathode in electrolyzer in electrochem. process for producing ionic liqs.)

IT 7580-37-2, Tetrakis(hydroxymethyl)phosphonium acetate 179075-88-8,  
1-Butyl-3-methylimidazolium nitrate 284049-75-8,  
1-Butyl-3-methylimidazolium acetate 327022-59-3,  
N-Methyl-N-propylpyrrolidinium tetrafluoroborate 478935-31-8,  
1-Butyl-3-methylimidazolium dihydrogenphosphate 528818-84-0  
528818-85-1  
(electrochem. process for producing ionic liqs .)

IT 203389-24-6, 1-Butylpyridinium nitrate 497144-87-3,  
1-Butyl-3-methylimidazolium formate  
(electrochem. process for producing ionic liqs .)

IT 66796-30-3, Nafion 117 100754-08-3, Nafion 902  
(electrochem. process for producing ionic liqs. using)

IT 64-19-7, Acetic acid, reactions 124-38-9, Carbon dioxide, reactions  
124-64-1, Tetrakis(hydroxymethyl)phosphonium chloride 1124-64-7,  
n-Butylpyridinium chloride 1310-73-2, Sodium hydroxide, reactions  
7631-99-4, Sodium nitrate, reactions 7647-01-0, Hydrochloric acid,  
reactions 7664-38-2, Phosphoric acid, reactions 7697-37-2, Nitric  
acid, reactions 16872-11-0, Tetrafluoroboric acid 79917-90-1,  
1-Butyl-3-methylimidazolium chloride 507468-58-8 528818-81-7,  
1-Butyl-3-methylimidazolium hydroxide 528818-82-8,  
N-Methyl-N-propylpyrrolidinium chloride  
(use in electrochem. process for producing ionic liqs.)

OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS  
RECORD (6 CITINGS)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

=> d his nofile

(FILE 'HOME' ENTERED AT 10:56:19 ON 09 SEP 2011)

FILE 'HCAPLUS' ENTERED AT 10:56:29 ON 09 SEP 2011

L1 1 SEA SPE=ON ABB=ON PLU=ON US20070254213/PN  
SEL RN

FILE 'REGISTRY' ENTERED AT 10:56:44 ON 09 SEP 2011

L2 41 SEA SPE=ON ABB=ON PLU=ON (7439-93-2/BI OR 10034-81-8/BI  
OR 12017-97-9/BI OR 12031-92-4/BI OR 12031-95-7/BI OR  
12039-13-3/BI OR 125579-65-9/BI OR 130447-45-9/BI OR  
1314-62-1/BI OR 132404-42-3/BI OR 14283-07-9/BI OR  
14797-73-0/BI OR 14874-70-5/BI OR 152894-10-5/BI OR  
16919-18-9/BI OR 16973-45-8/BI OR 175786-46-6/BI OR  
180984-63-8/BI OR 21324-40-3/BI OR 223437-10-3/BI OR  
244761-29-3/BI OR 24937-79-9/BI OR 29935-35-1/BI OR  
330671-30-2/BI OR 33454-82-9/BI OR 371-77-7/BI OR 37181-39-  
8/BI OR 37217-08-6/BI OR 5347-82-0/BI OR 55526-39-1/BI OR  
7791-03-9/BI OR 82113-65-3/BI OR 857631-30-2/BI OR  
857631-31-3/BI OR 857631-32-4/BI OR 857631-33-5/BI OR  
857631-34-6/BI OR 857631-35-7/BI OR 857631-36-8/BI OR  
9002-84-0/BI OR 90076-65-6/BI)  
L3 14407 SEA SPE=ON ABB=ON PLU=ON ?PYRROLIDINIUM?/CNS  
L4 14225 SEA SPE=ON ABB=ON PLU=ON L3 NOT PMS/CI  
L5 13774 SEA SPE=ON ABB=ON PLU=ON L4 AND NC4/ES  
L6 3 SEA SPE=ON ABB=ON PLU=ON L5 AND L2  
E LI4012TI5/MF  
L7 1 SEA SPE=ON ABB=ON PLU=ON LI4012TI5/MF  
E LIO4TI2/MF  
L8 1 SEA SPE=ON ABB=ON PLU=ON LIO4TI2/MF  
E O5V2/MF  
L9 16 SEA SPE=ON ABB=ON PLU=ON O5V2/MF  
E LI4MN5O12/MF  
L10 1 SEA SPE=ON ABB=ON PLU=ON LI4MN5O12/MF  
L11 2033 SEA SPE=ON ABB=ON PLU=ON (LI(L)MG(L)(TI OR MN)(L)O)/ELS  
L12 63 SEA SPE=ON ABB=ON PLU=ON L11 AND 12/O  
L13 19 SEA SPE=ON ABB=ON PLU=ON L12 AND 4/ELC.SUB  
L14 1 SEA SPE=ON ABB=ON PLU=ON CRLIO4TI/MF  
L15 365 SEA SPE=ON ABB=ON PLU=ON (LI(L)(MG OR NB OR ZR OR TO OR  
AL)(L)FE(L)P(L)O)/ELS  
L16 301 SEA SPE=ON ABB=ON PLU=ON L15 AND O4P  
L17 144 SEA SPE=ON ABB=ON PLU=ON L16 AND 5/ELC.SUB  
E LI4012TI5/MF  
L18 1 SEA SPE=ON ABB=ON PLU=ON LI4012TI5/MF  
E LIO4TI2/MF  
L19 1 SEA SPE=ON ABB=ON PLU=ON LIO4TI2/MF  
L20 2 SEA SPE=ON ABB=ON PLU=ON L2 AND PMS/CI

FILE 'HCAPLUS' ENTERED AT 11:57:58 ON 09 SEP 2011

L21 14082 SEA SPE=ON ABB=ON PLU=ON L5  
L22 233 SEA SPE=ON ABB=ON PLU=ON L6  
L23 1387 SEA SPE=ON ABB=ON PLU=ON L7  
L24 249 SEA SPE=ON ABB=ON PLU=ON L8  
L25 31676 SEA SPE=ON ABB=ON PLU=ON L9  
L26 243 SEA SPE=ON ABB=ON PLU=ON L10  
L27 14 SEA SPE=ON ABB=ON PLU=ON L13  
L28 40 SEA SPE=ON ABB=ON PLU=ON L14

10/584,379

L29 161 SEA SPE=ON ABB=ON PLU=ON L17  
 L30 1387 SEA SPE=ON ABB=ON PLU=ON L18  
 L31 249 SEA SPE=ON ABB=ON PLU=ON L19

FILE 'REGISTRY' ENTERED AT 11:59:17 ON 09 SEP 2011

L32 19 SEA SPE=ON ABB=ON PLU=ON L2 AND X/ELS  
 L33 17 SEA SPE=ON ABB=ON PLU=ON L32 NOT PMS/CI  
 L34 22 SEA SPE=ON ABB=ON PLU=ON L2 NOT L32  
 L35 19 SEA SPE=ON ABB=ON PLU=ON L34 NOT L6  
 L36 2 SEA SPE=ON ABB=ON PLU=ON L35 NOT M/ELS  
 L37 19 SEA SPE=ON ABB=ON PLU=ON L33 OR L36

FILE 'HCAPLUS' ENTERED AT 12:00:58 ON 09 SEP 2011

L38 38660 SEA SPE=ON ABB=ON PLU=ON L37  
 L39 QUE SPE=ON ABB=ON PLU=ON FUELCELL? OR BATTERY? OR  
 BATTERIES? OR (FUEL? OR ELECTROCHEM? OR ELECTRO(W)CHEM? OR  
 GALVAN? OR ELECTROLY? OR SECONDAR? OR PRIMAR?) (2A)CELL? OR  
 FC OR SOFC OR DFC OR PEMFC  
 L40 QUE SPE=ON ABB=ON PLU=ON ANODE# OR NEGATIVE ELECTRODE#  
 L41 QUE SPE=ON ABB=ON PLU=ON CATHODE# OR POSITIVE ELECTRODE#  
  
 L42 403 SEA SPE=ON ABB=ON PLU=ON L21 AND L39  
 L43 73 SEA SPE=ON ABB=ON PLU=ON L42 AND L40 AND L41  
 L44 45 SEA SPE=ON ABB=ON PLU=ON L43 AND L38  
 L45 12 SEA SPE=ON ABB=ON PLU=ON L44 AND (L22 OR L23 OR L24 OR  
 L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31)  
 L46 1 SEA SPE=ON ABB=ON PLU=ON L45 AND L1  
 L47 91 SEA SPE=ON ABB=ON PLU=ON L21 AND L40 AND L41  
 L48 1 SEA SPE=ON ABB=ON PLU=ON L47 AND L31  
 L49 19 SEA SPE=ON ABB=ON PLU=ON L47 AND (L22 OR L23 OR L24 OR  
 L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31)  
 L50 94152 SEA SPE=ON ABB=ON PLU=ON L20  
 L51 3 SEA SPE=ON ABB=ON PLU=ON L49 AND L50  
 L52 19 SEA SPE=ON ABB=ON PLU=ON L49 OR L51  
 L53 QUE SPE=ON ABB=ON PLU=ON ION?(3A) (LIQUID? OR FLUID?)  
 L54 14 SEA SPE=ON ABB=ON PLU=ON L52 AND L53  
 L55 19 SEA SPE=ON ABB=ON PLU=ON L52 OR L54  
 L56 19 SEA SPE=ON ABB=ON PLU=ON L45 OR L55  
 L57 8 SEA SPE=ON ABB=ON PLU=ON L56 AND (1802-2006)/PRY,AY,PY  
 L58 13 SEA SPE=ON ABB=ON PLU=ON L47 AND L50  
 L59 73 SEA SPE=ON ABB=ON PLU=ON L47 AND L39  
 L60 51 SEA SPE=ON ABB=ON PLU=ON L59 AND L53  
 L61 6 SEA SPE=ON ABB=ON PLU=ON L60 AND (1802-2006)/PRY,AY,PY  
 L62 11 SEA SPE=ON ABB=ON PLU=ON L57 OR L61